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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,258	11/04/2003	Robert J. Lang	78316 (P1669 US)	6078

27975 7590 06/16/2006

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EXAMINER	
LANE, JEFFREY D	
ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8/2

Office Action Summary	Application No.	Applicant(s)
	10/701,258	LANG ET AL.
	Examiner	**Art Unit**
	Jeffrey D. Lane	2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on 3/21/2006. These drawings are accepted.

Specification

2. The amendment filed 3/21/2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

3. Paragraph [0051] the output beam of figs 3a and 3b is high power.

4. Paragraph [0053] 175 is an infrared dump beam.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board

of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation less than 10%, and the claim also recites between 1% and 5% which is the narrower statement of the range/limitation.

For examination purposes claim 1 will be interpreted as:

A laser apparatus, comprising: a laser diode having a reflective back facet and a front facet having a reflectance of less than 1% for emitting an optical beam at a fundamental frequency along an optical path; a collimating means for at least partially collimating the optical beam into an at least partially collimated beam along the optical path, a bulk transmission grating disposed in the optical path for the at least partially collimated beam and for returning a portion of the at least partially collimated beam back toward the laser diode by means of diffraction said portion being less than 10% in power so as to provide optical feedback into the laser diode wherein the laser diode reflective back facet and the bulk transmission grating form an extended laser cavity, and wherein in operation, at least a substantial portion of the at least partially collimated beam is

transmitted through the bulk transmission grating for producing the laser output beam propagating along the optical path.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3-6, 8, 12 and 14 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Suganuma et al. (US 2002/0012377).

As for claim 1 Suganuma discloses, in figure 20, A laser apparatus, comprising: a laser diode 1 having a reflective back facet and a front facet having a reflectance of less than 1% (see Paragraph [0101]) for emitting an optical beam at a fundamental frequency along an optical path; a collimating means 2 for at least partially collimating the optical beam into an at least partially collimated beam along the optical path, a *bulk* transmission grating 3 (see Paragraph [0103]) *disposed in the optical path for receiving* the at least partially collimated beam and for returning a portion of the at least partially collimated beam back *toward* the laser diode (see paragraph [0157]) by means of diffraction *said portion being less than 10%* (See Paragraph [0194]) *in power so as to provide optical feedback into the laser diode* wherein the laser diode reflective back facet and the *bulk* transmission grating form an extended laser cavity, and wherein in operation, at least a substantial portion of the at least partially collimated beam is

transmitted through the bulk transmission grating for producing the laser output beam propagating along the optical path (See paragraph [0157]). Suganuma further discloses in Paragraph [0101], "It is desired that the semiconductor laser oscillator 1 have an anti-reflection (AR) coating on its output end so that the output end may have reflectance of 0.001% or less." Suganuma continues to further disclose in Paragraph [0103], "The volume hologram 3 is a three-dimensional diffraction grating". Suganuma further teaches, "The photopolyiner volume hologram has a high diffraction efficiency. The laser can therefore emits a laser beam of any desired wavelength at high efficiency" (Paragraph [0157]). Nakai (US 6122104) teaches how to make a grating with 98% diffraction efficiency (9/12-30).

As for claim 3, Suganuma discloses, wherein the extended cavity is an extended cavity in a Littrow configuration formed by the bulk transmission grating (See paragraph [0159]).

As for claim 4-6, Suganuma discloses, a frequency-doubling nonlinear element 23 positioned outside of the extended cavity to receive the laser output beam for producing a frequency-doubled optical output beam. Suganuma further discloses, "The nonlinear optical crystal 23 converts the laser beam to second harmonic waves. That is, the laser beam having a wavelength of 920 nm is changed to second harmonic waves having a wavelength of 460 nm " (Paragraph [0158]).

As for claim 8, Suganuma discloses, using a laser with a fundamental frequency of 920nm, which is in the range of several frequency doubling crystals that Suganuma discloses. (see Table 1).

As for claim 12, Suganuma discloses, in paragraph [0155], "The modification of FIG. 20, or the fourth modification, is different from the eighth modification (FIG. 14) in that the concave mirror 6, flat mirror 10 and nonlinear optical crystal 5 constitute a ring-shaped external resonator. " The ring shaped resonator would pass the laser beam through the nonlinear element multiple times.

As for claim 14, see rejection for claim 1.

9. Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sidorin et al. (US 2003/0214700).

10. Claims 1 and 13 rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sidorin et al. (US 2003/0214700).

As for claims 1 and 13, Sidorin discloses in figure 1A, A laser apparatus, comprising a laser diode 100 having a reflective back facet 105 and a front facet having a reflectance of less than 1% 110 for emitting an optical beam 145 at a fundamental frequency along an optical path, *a* collimating means 120 for at least partially collimating the optical beam 145 into an at least partially collimated beam 145 along the optical path, a *bulk* transmission grating 115 *disposed in optical path for receiving* the at least partially collimated beam 120 and for returning a portion of the at least partially collimated beam back *toward* the laser diode 100 by means of diffraction, *said portion being less than 10% in power so as to provide optical feedback into the laser diode* (Paragraph [0182], theoretical diffraction efficiency values near 100% would give less than 10% feedback), wherein the laser diode 100 reflective back facet 105 and the transmission grating 115 form an extended laser cavity, and wherein in operation, at

least a substantial portion of the at least partially collimated beam 145 is transmitted through the transmission grating 115 for producing the laser output beam 146 propagating along the optical path. Sidorin further discloses, "The laser 100 has an end facet with high reflectivity 105, provided in known manner, and an end facet with low reflectivity 110, also provided in known manner, for emitting electromagnetic radiation into the external cavity. " (Paragraph [0075]), "The diffraction device might comprise a reflection or a transmission grating " (Paragraph [0020]). Sidorin further discloses, "The configuration shown in FIG. 1A is a Littrow configuration ... " (See paragraph [0078]). Sidorin continues, "The diffractive structure might be provided by a phase or an amplitude grating, for instance as a surface relief grating... " (Paragraph [0042])

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. (US 2002/0012377) in view of Cook (US 6,432,471).

As for claim 2, Suganuma discloses all that pertains to claim 1. However Suganuma does not disclose using a rotatable grating. Cook discloses, "The lasing wavelength is changed (i.e., tuned) by rotating the grating 30 about an axis 32 perpendicular to the beam axis 34." (Column 4 lines 30-32) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a rotatable grating in Suganuma's laser device to tune the lasing wavelength.

12. Claims 1, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahatt et al. (US 6,600,563) in view of Sidorin et al. (US 2003/0214700).

As for claim 1, Bahatt discloses, in figure 1, a laser apparatus, comprising a laser diode 10 for emitting an optical beam at a fundamental frequency along an optical path, collimating means 40 for at least partially collimating the optical beam into an at least partially collimated beam along the optical path, a transmission grating 50 optically coupled to receive the at least partially collimated beam and for returning a portion of the at least partially collimated beam back into the laser diode by means of diffraction , *said portion being less than 10% in power so as to provide optical feedback through the laser diode*(Column 13 lines 42-43; if 90% is transmitted then less than 10% is returned), wherein the laser diode reflective back facet and the transmission grating form an extended laser cavity, and wherein in operation, at least a substantial portion of the at least partially collimated beam is transmitted through the transmission grating 40 for producing the laser output beam propagating along the optical path. However Bahatt does not disclose using a reflective back and an anti-reflective front. Sidorin discloses "In the ECL, the "lasing" cavity is sometimes described as a "gain" cavity rather than a lasing cavity as the end facet is anti-reflection coated, giving the laser diode the construction of a gain element rather than a laser" (paragraph [0004]). Sidorin further discloses "The facet may uniquely ... define the physical length of the external cavity by providing a discrete change in direction in the optical path" (paragraph [0004]). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to make Bahatt's front end facet of the laser diode anti-reflective to give the laser a gain element construction and to make the back end facet of the laser diode reflective to define the physical length of the external cavity.

As for claim 18, Bahatt discloses, "The transmission of this grating for `p` polarized light is around 90%. " (Column 13 lines 42-43). Bahatt further notes, "As shown in FIG. 1 a dichroic linear film polarizer 20 ... is used for polarizing the light in the `p` (II) direction. " (Column 12 lines 10-14).

As for claim 19, it is well known in the art to rotate laser diodes to get desired polarization, as evidenced by Naganuma (US 6,452,720). Therefore it would be obvious to one of ordinary skill in the art to rotate the laser to the desired polarization instead of using a polarizer as disclosed for claim 18 to use less parts.

As for claim 20, in figure 8 Bahatt discloses, a laser diode 400 emitting an optical beam, a collimating means 390, a transmission grating 380 receiving collimated beam. Bahatt further discloses, "The anamorphic lens system 120 can be a single lens, a combination of a standard lens and a cylindrical lens, or a spherical mirror ... "(Column 16 lines 7-9). However Bahatt does not disclose using a reflective back and an anti-reflective front. Sidorin discloses "In the ECL, the "lasing" cavity is sometimes described as a "gain" cavity rather than a lasing cavity as the end facet is anti-reflection coated, giving the laser diode the construction of a gain element rather than a laser" (Paragraph [0004]). Sidorin further discloses "The facet may uniquely ... define the physical length of the external cavity by providing a discrete change in direction in the optical path" (paragraph [0004]). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to make Bahatt's front end facet of the laser diode anti-reflective to give the laser a gain element construction and to make the back end facet of the laser diode reflective to define the physical length of the external cavity.

13. Claims 9 and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. (US 2002/0012377) in view of Burns et al. (US H1965H).

As for claims 9 and 10 Suganuma discloses all that pertains to claim 4. Suganuma does not disclose however using a periodically poled crystal. Burns discloses, "It will be appreciated that this represents significant improvements in tuning range and power over previous DFG system results and demonstrates a near-theoretical nonlinear conversion efficiency in field-poled $LiNbO_3$" (see column 8 lines 50-54). There fore it would have been obvious to one of ordinary skill at the time of the invention to use a $LiNbO_3$ periodically poled crystal in Suganuma's laser device to achieve a near-theoretical nonlinear conversion efficiency.

14. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. et al. (US 2002/0012377) in view of Hayakawa (US 6,885,687).

As for claim 11, Suganuma discloses all that pertains to claim 4. However Suganuma does not disclose using a non-linear waveguide. Hayakawa discloses in figure 10, using a non-linear waveguide 15. Hayakawa further discloses, "When the laser beam 11 is incident on the optical channel waveguide 18 so that the direction of linear polarization of the laser beam 11 is parallel to the surface 16a of the substrate 16, a .lambda./2 plate or the like, which rotates the direction of linear polarization, is unnecessary. " (Column 9 lines 52-56). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a non-linear waveguide with Suganuma's laser device to make the use of a $\lambda/2$ plate unnecessary.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. (US 2002/0012377) in view of Yang et al. (US 6,704,509).

As for claim 15, Suganuma discloses all that pertains to claim 1 (see above). However Suganuma does not discloses using an anti-reflection coating on the grating. Yang discloses, "The transmissive grating assembly 50 includes at least one substrate and a diffractive element. In the depicted embodiment, the grating assembly 50 includes first and second substrates 50a and 50b, and a diffractive element 50c disposed between the first and second substrates. Each of the first and second substrates 50a and 50b may be formed from low scattering glass having surfaces coated with an anti-reflection coating to enhance the passage of radiation. "(Column 6 lines 1-8). There fore it would have been obvious to one of ordinary skill in the art at the time of the invention to use an anti-reflection coating on Suganuma's diffraction grating to enhance the passage of radiation.

16. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. (US 2002/0012377) in view of Swanson et al. (US 5,956,355).

As for claim 16, Suganuma discloses all that pertains to claim 4 (see above). However Suganuma does not disclose using an optical isolator after the grating. Swanson discloses, "The isolator 84 ... serves to minimize reflections which can detrimentally effect the laser stability. "(Column 5 lines 33-35). There fore it would have been obvious to one of ordinary skill in the art to use an isolator in Suganuma's invention after the grating to stabilize the laser.

As for claim 17, the isolator as described for claim 16 above, is a coupling means associated with the nonlinear element for optical coupling of the laser output beam, which is configured for preventing back reflections into the extended laser cavity.

17. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. (US 2002/0012377) in view of Allenson et al. (US 6,829,278).

As for claim 21, Suganuma discloses all that pertains to claim 4 (see above). However Suganuma does not disclose using a single-frequency laser. Allenson discloses, "Although single mode lasers are necessary for high frequency operation, due to mode noise… "(Column 5 lines 4-6). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a single-frequency laser in Suganuma's laser device to be able to use it in a high-frequency operation.

As for claim 22, Suganuma discloses all that pertains to claim 4 (see above). However Suganuma does not disclose using a multi-frequency laser. Allenson discloses, "Although single mode lasers are necessary for high frequency operation, due to mode noise, for lower frequencies multi mode lasers or light emitting diodes may be used in the device. "(Column 5 lines 4-7). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a multi-frequency laser in Suganuma's laser device to be able to use it in a low-frequency operation.

18. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. in view of Allenson et al. as applied to claim 22 above, and further in view of Ziari et al. (US 6,215,809). Suganuma and Allenson disclose all that pertains to claim 22 as described above. However Suganuma and Allenson do not disclose using

a dither current. Allenson discloses "The first derivatives of <of the power to current> curves 162 and 163, denoted as 166 and 167, respectively, are much smoother and clearly show that the kinks are reduced with increased dither amplitude." (Column 12 lines 58-61) Allenson further discloses "According to the teachings of another aspect of the present invention, a method for operating a laser source to improve operating stability comprises applying an electrical signal to an electrical input of the laser source to generate a light beam output " (Column 4 lines 45-49) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a dither current to get a smoother power to current ratio.

19. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. (US 2002/0012377) in view of Ziari et al. (US 6,215,809). Suganuma discloses all that pertains to claim 5 (see above). However Suganuma does not disclose using a means for controlling optical power. . Allenson discloses "The first derivatives of <of the power to current> curves 162 and 163, denoted as 166 and 167, respectively, are much smoother and clearly show that the kinks are reduced with increased dither amplitude." (Column 12 lines 58-61) Allenson further discloses "According to the teachings of another aspect of the present invention, a method for operating a laser source to improve operating stability comprises applying an electrical signal to an electrical input of the laser source to generate a light beam output " (Column 4 lines 45-49) Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a

dither current to get a smoother power to current ratio. The dither current is a means for controlling optical output.

20. Claim 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma, Allenson, and Ziari as applied to claim 24 above, and further in view of Govorkov et al. (US 6,614,584). Suganuma, Allenson and Ziari disclose all that pertains to claim 24 (see above). However they do not disclose using a feedback circuit with an optical detector and a heating element to change the temperature of the nonlinear element. Govorkov discloses in figure 6, an optical detector 250 for measuring optical power of the frequency-doubled output beam; a heating element for changing temperature of the nonlinear element 102 and 202; and, an electrical feedback circuit 153 electrically coupling the heating element with the optical detector 250. Govorkov further discloses, "The fourth embodiment <figure 6> utilizes a different concept of automatic adjustment in a single or multi-stage converter. It is particularly advantageous when the beam profile of beam 106 has a complex shape… " Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use an optical detector connected to heating elements for the nonlinear element in Suganuma's laser device so that a complex beam shape can be formed and controlled.

21. Claim 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma, Allenson, and Ziari as applied to claim 24 above, and further in view of Daiber (US 6,816,516). Suganuma, Allenson and Ziari disclose all that pertains to claim 23 (see above). However they do not disclose using a feedback circuit with an optical detector and a means for rotating the transmission grating. Diaber discloses in figure

9a, optical control means comprising an optical detector 56 for measuring optical power of the frequency-doubled output beam 22; means for rotating the transmission grating 36 for tuning of the fundamental laser frequency; and, an electrical feedback circuit electrically connecting the optical detector 56 with the means for rotating the transmission grating 36. Diaber further discloses, "If the constructive interference fringe defined by grating 118 is not centered, spatial loss to the retroreflected portion of the beam occurs... " (Column 16 lines 1-3). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use to control the angle of the grating through a feedback mean in Suganuma's laser device to avoid spatial loss.

22. Claim 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al. (US 2002/0012377). An optimization of wavelength. Grating inherently changes wavelengths (aka tuning). There fore it would be obvious to one of ordinary skill in the art to use the grating to change the grating to change the wavelength to 980 nm.

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

23. Applicant's arguments filed 3/21/06 have been fully considered but they are not persuasive.

24. A "diffraction efficiency" (not in the claims) is what gets transmitted not what is reflected. See Brasier (US 4337994) for interpretation of the term (Column 1 Lines 58-61) or Nakai (US 6122104) (Column 11 lines 33-35). Therefore the argument that the reference is teaching away from having less than 10% feedback is not persuasive.

25. As for the arguments that require the feedback to be between 1% and 5% is a range with in a range and is properly rejected by 35 USC 112 2nd paragraph (See MPEP § 2173.05(c)). The Examiner has the responsibility to give the broadest reasonable interpretation using, if possible, an interpretation that is consistent with 35 USC 112, and as such has interpreted the claim as stated above under "Claim Rejections - 35 USC § 112". Therefore the arguments directed toward the requirement of the feedback being between 1% and 5% are moot.

26. Bahatt's diffraction grating would provide feedback to the laser diode; therefore it does meet the limitation of claims. Therefore whether Bahatt uses the grating for the sensor or not is moot.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey D. Lane whose telephone number is (571) 272-1676. The examiner can normally be reached on Monday thru Friday 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey Lane

Jeffrey D Lane
Examiner
Art Unit 2828

JDL

MINSUN OH HARVEY
PRIMARY EXAMINER